Work Unit Library -- Work Units by Family

WU Family: General Support and Work Doc Work Unit: General Support & Work Doc; ea A a

Description General Support and Work Document

Duration (hours) 120

NucOp	10	RCT	6	MC	3	P/M	6	EI/IT	4	Trans	0	OthCr 4
PIC	7.5	RCA	8	NucSaf	8	Waste	34					
Engr	40	ES&Q	12	PI/Sch	7.5	Supv	3					
				M/S/E	1500			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope General support and work document preparation for deactivation projects throughout the 300 Area

Assumptions Work Document will be prepared to support specific work items such as draining liquid systems. Mobilization for work activity is included as the activity is once per facility as opposed to per a unit of measure such as ft of pipe or number of items.

Basis of Estimate Estimate includes general support for task including engineering support, waste and transportation support, and management oversite and audit. Work document preparationwill include review approval and worker involvement through a process similar to automated job hazards analysis. Mobilization for work activity is included as the activity is once per facility as opposed to per a unit of measure such as ft of pipe or number of items. Estimate includes the following activities: Work Document (NucOp 2, RCT 2, P/M 2, RCA 4, NucS 4, Waste 4, Eng 30, ES&Q 12, M/S/E $500); Overall support (RCA 4, NucS 4, Waste 30, Eng 10); Mobilization (NucOp 8, RCT 4, P/M 4, EI/IT 4, OthCr 4, M/S/E $1000). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	33	Total BU Dollars:	$1,980.00		
Total NBU Hours:	120	Total NBU Dollars:	$9,600.00		
		Total Outside Dollars:	$1,500.00	Total Cost Per Work Unit:	$13,080.00

WU Family: Housekeep Clean space; sqft Work Unit: Housekeep Clean Area; sqft A b

Description Housekeep Clean Area; sq ft

Duration (hours) 0.008

NucOp	0.006	RCT	0	MC	0.001	P/M	0	EI/IT	0	Trans	0.006	OthCr	0
PIC	0.003	RCA	0	NucSaf	0	Waste	0						
Engr	0	ES&Q	0	PI/Sch	0.003	Supv	0.001						
		M/S/E	0			Suppt	0						

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	0.001			Swb	No	SeaVan	No
Weight per WU	0.001			Crate	No	100vpk	No

Basis Of Estimate

Scope General cleanup to enable deactivation and D&D to proceed.

Assumptions Contents of the facility are non-contaminated. All remaining material in the facility has been abandoned by prior occupants. Based on 1000 sq ft area, broken down to sq ft cost application. 1 cu ft to lb of hazardous waste material will be found (i.e. cleaning materials, solvent).

Basis of Estimate This estimate is based upon general cleanup to enable deactivation and D&D to proceed throughout the 300 Area. To conduct this task the following activities will be performed: Remove combustibles (NucOp 4); Remove Furniture (Trans 4); Remove Equipment (NucOp 2, Trans 2); Identify Hazardous Material (NucOp 0.25, Waste 0.25); Remove Hazardous Waste (NucOp 0.5, Waste 0.25). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.013	Total BU Dollars:	$0.78		
Total NBU Hours:	0.007	Total NBU Dollars:	$0.56		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$1.34

WU Family: Housekeep Cont. space; sqft Work Unit: Housekeep Cont. Areas; sqft A c

Description Housekeep contaminated areas; sqft

Duration (hours) 0.008

NucOp	0.03	RCT	0.03	MC	0.01	P/M	0	EI/IT	0	Trans	0.01	OthCr	0
PIC	0.02	RCA	0	NucSaf	0	Waste	0						
Engr	0	ES&Q	0	PI/Sch	0.02	Supv	0.01						
				M/S/E	1.6			Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	0.001			Swb	No	SeaVan	No
Weight per WU	0.001			Crate	No	100vpk	No

Basis Of Estimate

Scope General cleanup to enable deactivation and D&D to proceed.

Assumptions (1) Contents of the facility are contaminated. (2) All remaining material in the facility has been abandon by prior occupants. (3) Based on 1000 sq-ft area, broken down to sq-ft cost application. (4) 1 cu-fto 1 pound of hazardous waste material will be found (i.e. cleaning materials, solvent).

Basis of Estimate Tasks include: Removing combustible material (NucOp 8, RCT 8, M/S/E $300); Removing furniture (NucOp 4, RCT 4, Trans 4, M/S/E $200); Removing Loose Equipment (NucOp 4, RCT 4, Trans 4, M/S/E $200); Identify hazardous material (NucOp 0.5, RCT 0.5, Waste 0.25, M/S/E $200); Remove Hazardous material (NucOp 0.5, RCT 0.5, Waste 0.25, M/S/E $200); Identify radioactive material (NucOp 4, RCT 4, M/S/E $200); Remove radioactive material (NucOp 8, RCT 8, M/S/E $300). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.08	Total BU Dollars:	$4.80		
Total NBU Hours:	0.05	Total NBU Dollars:	$4.00		
		Total Outside Dollars:	$1.60	Total Cost Per Work Unit:	$10.40

WU Family: Char., office non-rad; sqft Work Unit: Charact. Office Space; sqft A d

Description Characterize Office Space; sqft

Duration (hours) 1

NucOp	0.009	RCT	0.009	MC	0	P/M	0	EI/IT	0	Trans	0 OthCr	0
PIC	0	RCA	0.012	NucSaf	0	Waste	0					
Engr	0	ES&Q	0.012	PI/Sch	0	Supv	0					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope

Assumptions

Basis of Estimate Allow $3/sqft for office space.

Total BU Hours:	0.018	Total BU Dollars:	$1.08		
Total NBU Hours:	0.024	Total NBU Dollars:	$1.92		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$3.00

WU Family: Space, office non-rad; sqft Work Unit: Deactivate Office Space; sqft A e

Description Deactivate office Space; sqft

Duration (hours) 0.046

NucOp	0.0105994	RCT	0	MC	0.0085555	P/M	0.00955	El/IT	0.0270505	Trans	0	OthCr	0.0003737
PIC	0.01188	RCA	0	NucSaf	0	Waste	0.0037373						
Engr	0.0038787	ES&Q	0.0038787	PI/Scho	0.01188	Supv	0.00475						
			M/S/E		0		Suppt	0.0073					

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	5	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.00052			Swb	No	SeaVan	No
Weight per WU	0.03655			Crate	No	100vpk	No

Basis Of Estimate

Scope Deactivate noncontaminated office space throughout the 300 Area.

Assumptions Assume all office space will be non-contaminated and estimated on a 100 square foot basis. Assume 35% of lighting ballasts will contain PCBs. Assume light bulbs and tubes will be disposed of as hazardous waste. Assume procurement of generators and light stands for temporary lighting will be captured in project support. Hazardous lighting - assume 4 sodium vapor or mercury vapor bulbs for 50% the buildings. Fire system, remove sprinkler heads - 50% of all buildings will have a fire system
Collect and recycle freon - assume two air conditioning 2 units. Tritium exit signs - assume 25% of buildings has two tritium exit signs. Utilities (electrical, water, natural gas) disconnects/isolations will be done prior to deactivation and will be completed by the Utilities team. D&D will estimate all asbestos removal. All ceiling fixtures (lighting, smoke detectors, exit signs) will be accessible by ladder. Outdoor lighting will be accessible by ladder. Abandoned office furniture will be disposed of with building debris. Hot water heaters will be vented and drained. Assume all thermostats, fire alarm pull boxes, mercury switches, smoke detectors and sprinklers contain hazardous materials. Lead based paint will not require removal, Fire extinguishers will be recycled. Model work unit = 13768 sq ft.

Basis of Estimate This estimate is based upon deactivating a non-contaminated office space in the 300 Area. To conduct this task the following activities will be performed: Set up temporary lighting (NucOp 8, Eng 0.8, ES&Q 0.8); Remove PCB ballasts (El/IT 16, Waste 0.4, Eng 1.6, ES&Q 1.6); Remove and crush fluorescent tubes (El/IT 8, Eng 0.8, ES&Q 0.8); Remove outdoor lighting (El/IT 2, Waste 0.2, Eng 0.2, ES&Q 0.2); Recycle fire extinguishers (NucOp 0.5, Eng 0.05, ES&Q 0.05, Suppt $10); Collect and recycle freon (P/M 8, Waste 2, Eng 0.8, ES&Q 0.8); Remove batteries from exit signs, emergency lights, etc. (NucOp 2, Waste 0.25, Eng 0.2, ES&Q 0.2); Remove tritium exit signs (OthCr 0.5, Eng 0.05, ES&Q 0.05); Remove thermostat, fire alarm pull boxes, mercury switches, smoke detectors (EL/IT 3, Waste 0.25, Eng 0.3, ES&Q 0.3); Fire system, remove heads, drain (P/M 3, Eng 0.3, ES&Q 0.3); Deactivate hot water heater (P/M 2, Eng 0.2, ES&Q 0.2); Remove hazardous lighting (NucOp 4, EL/IT 8, Waste 2), Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.0560694	Total BU Dollars:	$3.36		
Total NBU Hours:	0.03998	Total NBU Dollars:	$3.20		
		Total Outside Dollars:	$0.01	Total Cost Per Work Unit:	$6.57

WU Family: Char., indus. non-rad; sqft Work Unit: Charact. Indust. Space; sqft A f

Description Characterize Industrial Space; sqft

Duration (hours) 1

NucOp	0.02	RCT	0.02	MC	0	P/M	0	El/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0.023	NucSaf	0	Waste	0					
Engr	0	ES&Q	0.023	Pl/Sch	0	Supv	0					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope

Assumptions

Basis of Estimate Allow $6.08/sqft f or indistrial space.

Total BU Hours:	0.04	Total BU Dollars:	$2.40		
Total NBU Hours:	0.046	Total NBU Dollars:	$3.68		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$6.08

WU Family: Space, indus. non-rad; sqft Work Unit: Deactivate Indust. Space;sqft A g

Description Deactivate Indistrial Space; sqft

Duration (hours) 12.8

NucOp	0.00289	RCT	0	MC	0.0030707	P/M	0.00255	EI/IT	0.0115656	Trans	0	OthCr	0.0000808
PIC	0.00426	RCA	0	NucSaf	0	Waste	0.0008686						
Engr	0.0008686	ES&Q	0.0010909	PI/Scho	0.00426	Supv	0.001						
				M/S/E	0.1875	Suppt	0.00156						

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	5	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.000209			Swb	No	SeaVan	No
Weight per WU	0.0147			Crate	No	100vpk	No

Basis Of Estimate

Scope Deactivate Industrial Space; sqft

Assumptions Assume all industrial space will be estimated on a 100 sq ft basis. Assume 35% of lighting ballasts will contain PCBs. Assume light bulbs and tubes will be disposed of as hazardous waste. Assume procurement of generators and light stands for temporary lighting will be captured in project support. Assume 32' manlift will be rented at a rate of $120/day. Hazardous lighting - assume 4 sodium vapor or mercury vapor bulbs for 50% of buildings. Fire system, remove sprinkler heads - 50% of all buildings will have a fire system. Collect and recycle freon - assume two air conditioning 2 units. Tritium exit signs - assume 25% of buildings have two tritium exit signs. Utilities (electrical, water, natural gas) disconnects/isolations will be done prior to deactivation and will be completed by the utilities team. D&D will estimate asbestos removal. Ceiling fixtures (lighting, smoke detectors, exit signs) will require manlift to access. Abandoned furniture will be disposed of with building debris. Hot water heaters will be vented and drained. Assume all thermostats, fire alarm pull boxes, mercury switches, smoke detectors, and sprinklers contain hazardous material. Lead based paint will not require removal. Fire extinguishers will be recycled.

Basis of Estimate This estimate is based upon deactivating a non-contaminated office space in the 300 Area. To conduct this task the following activities will be performed: Temporary Lighting (NucOp 8; Eng 0.8; ES&Q 0.8), Manlift (M/S/E 1200), Remove PCB ballasts (EL/IT 32; Waste 0.4; Eng 1.4; ES&Q 2), Remove and crush fluorescent (EL/IT 16; Eng 0.8; ES&Q 1), Remove outdoor lighting (EL/IT 4; Waste 0.2; Eng 0.2; ES&Q 0.4), Remove/recycle fire extinguishers (NucOp 0.5; Eng 0.05; ES&Q 0.05; Suppt 10), Collect and recycle freon (P/M 8; Waste 2; Eng 0.8; ES&Q 0.8), Remove batteries from exit signs, emergency lights, and other misc. (NucOp 2; Waste 0.25; Eng 0.2; ES&Q 0.2), Remove tritium exit signs (OthCr 0.5; Eng 0.05; ES&Q 0.05), Remove thermostat, fire alarm, mercury switches, smoke detectors (EL/IT 6; Waste 0.25; Eng 0.3; ES&Q 0.5), Fire system - remove heads (P/M 6; Waste 0.4; Eng 0.3; ES&Q 0.6), Deactivate hot water heater (P/M 2; Eng 0.2; ES&Q 0.2), Remove hazardous lighting (NucOp 8, EL/IT 16, Waste 2, Eng 0.2, ES&Q 0.4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.020101	Total BU Dollars:	$1.21		
Total NBU Hours:	0.01303	Total NBU Dollars:	$1.04		
		Total Outside Dollars:	$0.19	Total Cost Per Work Unit:	$2.44

WU Family: Char., contam.; sqft Work Unit: Characterize Cont. Space; sqft A h

Description Characterize Contaminated Space; sqft

Duration (hours) 1

NucOp	0.043	RCT	0.043	MC	0	P/M	0	EI/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0.024	NucSaf	0	Waste	0					
Engr	0	ES&Q	0.024	PI/Sch	0	Supv	0					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope Characterize contaminated space.

Assumptions

Basis of Estimate Allowed $9/sq ft for contaminated space.

Total BU Hours:	0.086	Total BU Dollars:	$5.16		
Total NBU Hours:	0.048	Total NBU Dollars:	$3.84		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$9.00

WU Family: Space, contam.; sqft Work Unit: Deactivate Cont. Space; sqft A i

Description Deactivate contaminated space; sqft

Duration (hours) 0.18

NucOp	0.014	RCT	0.018555	MC	0.009991	P/M	0.010417	El/IT	0.048177	Trans	0.000195	OthCr	0.000234
	647		555		991		417		177		195		234
PIC	0.023128	RCA	0	NucSaf	0	Waste	0.003711711						
Engr	0.002227227	ES&Q	0.002891891		PI/Scho 0.013 877		Supv	0.005551					
			M/S/E		0.625		Suppt	0.0046888					

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.028			Swb	No	SeaVan	No
Weight per WU	1.5			Crate	No	100vpk	No

Basis Of Estimate

Scope Deactivate contaminated space; sq ft

Assumptions Assume all office space will be non-contaminated and estimated on a 100 sq ft basis. Assume 35% of lighting ballasts will contain PCBs. Assume light bulbs and tubes will be disposed of as hazardous waste. Assume procurement of generators and light stands for temporary lighting will be captured in project support. Hazardous lighting - assume 4 sodium vapor or mercury vapor bulbs for 50% of buildings. Fire system, remove sprinkler heads - 50% of all buildings will have a fire system. Collect and recycle freon - assume two air conditioning 2 units. Tritium exit signs - assume 25% of buildings have two tritium exit signs. Utilities (electrical, water, natural gas) disconnects/isolations will be done prior to deactivation and will be completed by the Utilities team. D&D will estimate all asbestos removal. All ceiling fixtures (lighting, smoke detectors, exit signs) will be accessible by ladder. Outdoor lighting will be accessible by ladder. Abandoned office furniture will be disposed of with building debris. Hot water heaters will be vented and drained. Assume all thermostats, fire alarm pull boxes, mercury switches, smoke detectors and sprinklers contain hazardous materials. Lead based paint will not require removal. Fire extinguishers will be disposed of as mixed waste. There is a 60% Man Hour efficiency for Radiation/contamination work relative to industrial deactivation.

Basis of Estimate This estimate is based upon deactivating a contaminated industrial space in 300 area. Activities include: establish temporary lighting, remove PCB ballasts, remove and crush fluorescent tubes, remove lighting, remove fire extinguishers, collect and recycle freon, remove batteries from exit signs, emergency lights, etc., remove tritium exit signs, remove thermostat, fire alarm pull boxes, mercury switches, smoke detectors, fire system, remove heads, drain, deactivate hot water heater, remove hazardous lighting. One day = 9 hours. Three operators for two days to remove and package waste, two RCTs for two days, one material coordinator for 1 day, two pipefitters for one day, 4 electricians for two days, PIC at 10%, waste coordinator for 2 days, planner at 10%, $1200 for manlift for one week.

Total BU Hours:	0.102216	Total BU Dollars:	$6.13		
Total NBU Hours:	0.051385	Total NBU Dollars:	$4.11		
		Total Outside Dollars:	$0.63	Total Cost Per Work Unit:	$10.87

WU Family: Fix contamination; sqft Work Unit: Fix Cont. in Space; sqft A j

Description Fix contamination in space; sqft

Duration (hours) 0.01

NucOp	0.02	RCT	0.01	MC	0	P/M	0	EI/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0.001	Supv	0.001					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope Fix contamination in a space using paint or fixative.

Assumptions Assumes easy access to area being fixed (I.e., walls, floors, revealed interior surfaces.

Basis of Estimate 100 sq ft assumed. 100% coverage required. Assumes 1 operator for 1 hour to paint/spray fixative, 1 RCT and 1 Operator to provide full time coverage and assist outside zone. Waste is negligible. Non-hazardous paint/fixative used so no hazardous waste produced. Includes 10% planner and supervisor time.

Total BU Hours:	0.03	Total BU Dollars:	$1.80		
Total NBU Hours:	0.002	Total NBU Dollars:	$0.16		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$1.96

WU Family: Cut structure, contam; sqft Work Unit: Cut concretel;sq.ft. cut face A k

Description The scope of the unit estimate is the cutting of contaminated concrete using diamond wire saw. The unit of estimate is sqft of the cut face. Based on Tech. Dev. OSTI 2107 9/98

Duration (hours) 0.12

NucOp	0.12	RCT	0.12	MC	0	P/M	0	EI/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0					
				M/S/E	0			Suppt	62.9			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	1	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.25			Swb	Yes	SeaVan	No
Weight per WU	20			Crate	No	100vpk	No

Basis Of Estimate

Scope The rate of cutting is proportional to the thickness of the section being cut and the length of the cut. Therefore the unit of estimate is area of the cut face. Based on tech. Dev. OSTI 2107 9/98

Assumptions This work is assumed to be subcontracted to a specialty company that deals with sawing contaminated concrete. The site will provide one Operator and one RCT full time to monitor and support the contractor.

Basis of Estimate Based on tech. Dev. OSTI 2107 9/98. The cost for cutting was taken from this reference.

Total BU Hours:	0.24	Total BU Dollars:	$14.40		
Total NBU Hours:	0	Total NBU Dollars:	$0.00		
		Total Outside Dollars:	$62.90	Total Cost Per Work Unit:	$77.30

WU Family: Fix contamination, duct; sqft Work Unit: Fix contamination, duct; sqft A I

Description Fix contamination in a space; linear ft

Duration (hours) 0.02

NucOp	0.04	RCT	0.02	MC	0	P/M	0.02	EI/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0.002	Supv	0.002					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk	No
Volume per WU	1			Swb	No	SeaVan	No
Weight per WU	10			Crate	Yes	100vpk	No

Basis Of Estimate

Scope Fix contamination in a space using spray-on fixative.

Assumptions Assumes duct is roughly 24" duct (round or square) and can be accessed relatively easily.

Basis of Estimate 100 lin ft assumed for roughly 24" duct. 100% coverage is required. Assumes 1 operator for 2 hours to paint/spray fixative, 1 RCT and 1 Operator to provide full time coverage and assist outside zone, plus 1 millwright to provide opening in duct every 20 lin ft (20 to 25 min each; 2 hours total). Waste is neglible. Non-hazardous paint/fixative used so no hazardous waste produced. Includes 10% planner and supervisor time.

Total BU Hours:	0.08	Total BU Dollars:	$4.80		
Total NBU Hours:	0.004	Total NBU Dollars:	$0.32		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$5.12

WU Family: Isolate drain line; ea point Work Unit: Grout room drain; ea B a

Description Grout one room floor drain line in a contaminated area

Duration (hours) 1

NucOp	2	RCT	0.5	MC	1	P/M	0	EI/IT	0	Trans	0 OthCr	1
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0					
			M/S/E		300		Suppt		0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope Grout one room floor drain line in a contaminated area

Assumptions Sampling of drain is covered under characterization allowance and is not estimated here

Basis of Estimate Grout drain line (P/M 5, PIC 5)

Support (PIC 1, Supv 1)

Total BU Hours:	4.5	Total BU Dollars:	$270.00		
Total NBU Hours:	0	Total NBU Dollars:	$0.00		
		Total Outside Dollars:	$300.00	Total Cost Per Work Unit:	$570.00

WU Family: Isolate process line; ea point Work Unit: Isolate process line; ea B b

Description Uncover, grout and backfill one contaminated process line

Duration (hours) 15

NucOp	12	RCT	16	MC	15	P/M	0	EI/IT	0	Trans	20	OthCr	0
PIC	5	RCA	0	NucSaf	0	Waste	0						
Engr	5	ES&Q	0	PI/Sch	0	Supv	0						
				M/S/E	300			Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope Uncover, grout and backfill one contaminated process line

Assumptions

Basis of Estimate Uncover and backfill drain line (NO 10, Trans/EO 2@10 + $300, RCT 5, Carp 5, PIC 10)

Grout drain line (P/M 5, PIC 5)

Eng support (Eng 5)

Total BU Hours:	63	Total BU Dollars:	$3,780.00		
Total NBU Hours:	10	Total NBU Dollars:	$800.00		
		Total Outside Dollars:	$300.00	Total Cost Per Work Unit:	$4,880.00

WU Family: LLW process fluids, ft Work Unit: Drain Process Fluids, ft C a

Description Drain Process Liquids LLW; ft of 3" pipe

Duration (hours) 0.04

NucOp	0.12	RCT	0.07	MC	0.03	P/M	0.05	EI/IT	0	Trans	0.01	OthCr 0.06
PIC	0.08	RCA	0	NucSaf	0	Waste	0.05					
Engr	0	ES&Q	0	PI/Sch	0.08	Supv	0.03					
			M/S/E		26.25		Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.007			Swb	No	SeaVan	No
Weight per WU	4			Crate	No	100vpk	No

Basis Of Estimate

Scope Tap and drain a liquid LLW pipe system or tank. Scale based upon volume of waste.

Assumptions (1) One work document would be prepared, reviewed, and approved. General document with separate sections for different process streams for each building or facility. General support would be required. Mobilization for work would be included in the work document. Would be added to the scope included in this estimate. (2) Liquids will be pumped into 55 gal drums, assume contact handled. There would not be large dose from pipe. Pumping would be completed using a peristaltic pump with a flow rate of 2 GPM. (3) Contaminates in pipe would be fixed if needed during the removal operation, costs estimated as part of draining system. (4) Assume system is penetrated once per 50 ft. (5) Drums would be assumed to be water est. wt is 400#, 3 in. pipe would yield 1 drum/100ft. (6) One bulk sample required per drum for waste characterization, cost $3,000 per sample. (7) Assume the liquid would be for liquids to go to ETF for processing and disposal. (8) large diameter pipe > 4 in. would be handled similar to draining of a tank. Tanker or large tank would be used rather than drums. (9) Tanks would be assumed to be emptied during past operations, material remaining would be heals or less than 3% of tank volume.

Basis of Estimate (1) Assume pipe is penetrated once per 50 ft. To penetrate pipe RCT surveys are required, a glove bag is used, a device is clamped onto the pipe and a hole drilled. (2) Liquids will be pumped into 55 gal drums, assume contact handled, not large dose from pipe. Pumping would be completed using a peristaltic pump with flow rates of 2 GPM. Tubing would go from pipe to the drum location which would be convenient for movement of drums. (3) Stabilization, If needed, to be performed during removal. (4) Drums would be assumed to be water est. wt 400 #. (5) One bulk sample is required per drum. (6) Several [estimated at 10] drums of solidified waste would be transported in each shipment is for 1/10 shipment. (7) To conduct this task, the following activities will be performed: Penetrate pipe (NucOp 4, RCT 2, P/M 4, M/S/E $250); Pump Process Fluids (NucOp 4, RCT 2, Waste 2, M/S/E $200); Fix contamination in pipe (NucOp 1, RCT, P/M 1, OthCr 2, M/S/E $100); Transport drum to staging area (NucOp 1, RCT 1, OthCr 4, Waste 2, M/S/E $2075); Transport for Disposal (RCT 0.25, Trans 1, Waste 1). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.34	Total BU Dollars:	$20.40		
Total NBU Hours:	0.24	Total NBU Dollars:	$19.20		
		Total Outside Dollars:	$26.25	Total Cost Per Work Unit:	$65.85

WU Family: Liq chem, ft Work Unit: Drain Non-Rad Liq Chem; ft C b

Description Drain Non Rad Liquid Chemical

Duration (hours) 0.04

NucOp	0.28	RCT	0.02	MC	0.04	P/M	0.12	EI/IT	0	Trans	0.02	OthCr	0
PIC	0.11	RCA	0	NucSaf	0	Waste	0.12						
Engr	0	ES&Q	0	PI/Sch	0.11	Supv	0.04						
				M/S/E	34			Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	5	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.07			Swb	No	SeaVan	No
Weight per WU	4.34			Crate	No	100vpk	No

Basis Of Estimate

Scope Tap and drain a liquid chemically contaminated pipe system or tank. Lines would be flushed and cleaned. Waste would be shipped for treatment. Scale based upon volume.

Assumptions (1) One work document would be prepared, reviewed, and approved. General document with separate sections for different process streamsfor ech building or facility. General support would be required. Mobilization for work would be included in the work document. These cost would be in addition to those on this template. (2) One bulk sample required per drum for waste characterization, cost $3,000 per sample. (3) Tanks would be assumed to be emptied during past operations, material remaining would be heals or less than 3% of tank volume. (4) Tanker would be used for bulk liquid or items to be recycled, drums handled seperately. Glycol to be recycled. Acid and Caustic Product Recycled - other liquids are treated. (5) Waste generated is assumed to be 1/2 line drain and 1/2 flush solution by volume. 100 ft of pipe assumed to fill one drum.

Basis of Estimate (1) Assume pipe is penetrated once per 50 ft. To penetrate pipe RCT surveys are required, a glove bag is used, a device is clamped onto the pipe and a hole drilled. (2) Liquids will be pumped into 55 gal drums, assume contact handled, not large dose from pipe. Pumping would be completed using a peristaltic pump with flow rates of 2 GPM. Tubing would go from pipe to the drum location which would be convenient for movement of drums. (3) Stabilization, If needed, to be performed during removal. (4) Drums would be assumed to be water est. wt 400 #. (5) One bulk sample is required per drum. (6) Several [estimated at 10] drums of solidified waste would be transported in each shipment is for 1/10 shipment. Estimate includes the following activities: Attach hose to system (NucOp 2, P/M 4, M/S/E $50); penetrate pipe at low points (NucOp 2, M/S/E $100); Pump process fluids (NucOp 4, M/S/E $50); Rinse and flush chemicals from pipe (NucOp 12, Waste 2, M/S/E $100); Transport drum to staging area (NucOp 1, Waste 2, M/S/E $50); Sample/analyze drum contents (NucOp 1, P/M 4, M/S/E $3000); Solidify/treat liquid (NucOp 4, Waste 4, M/S/E $50); Transport for disposal (NucOp 2, RCT 2, Trans 2, Waste 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.48	Total BU Dollars:	$28.80		
Total NBU Hours:	0.38	Total NBU Dollars:	$30.40		
		Total Outside Dollars:	$34.00	Total Cost Per Work Unit:	$93.20

WU Family: Water drain; ft Work Unit: Drain Water Lines; ft C c

Description Drain Water Lines; ft of pipe

Duration (hours) 0.02

NucOp	0.3	RCT	0	MC	0.01	P/M	0.5	EI/IT	0	Trans	0	OthCr 0
PIC	0.02	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0.02	Supv	0.01					
				M/S/E	0.75			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	0.006			Swb	No	SeaVan	No
Weight per WU	3.6			Crate	No	100vpk	No

Basis Of Estimate

Scope Drain water lines inside buildings.

Assumptions (1) One work document would be prepared, reviewed and approved. General document with separate sections for different process streams for each building or facility. General support would be required. Mobilization for work would be included in the work document. Would be added to the scope included in this estimate. (2) Water will be pumped into process sewer for processing at 300 Area ETF, and ETF will have capacity for the water sent. (3) Assume system is drained at normal drains and only minor low point will remain. Low point of pipe less than 1-1/2 in will be opened and drained, but not collected. (4) An average of 40 gallons of water per 100 ft of 3 inch pipe is estimated. (5) Water is acceptable for transfer to ETF. (6) No characterization or sampling is required.

Basis of Estimate Assume one low point is drained in pipe per 100 ft. Estimated includes the following activities: Attach hose to system (NucOp 1, P/M 2, M/S/E $50); Penetrate pipe at low points (NucOp 0.5, P/M 1, M/S/E $25); Pump water to process sever (NucOp 1, P/M 2). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.81	Total BU Dollars:	$48.60		
Total NBU Hours:	0.05	Total NBU Dollars:	$4.00		
		Total Outside Dollars:	$0.75	Total Cost Per Work Unit:	$53.35

WU Family: Drain lubricant; gal Work Unit: Drain Lubricant Reserviors; ga C d

Description Drain Lubricant Reserviors; gallon

Duration (hours) 8

NucOp	1.25	RCT	0.55	MC	0.18	P/M	0	EI/IT	0	Trans	0	OthCr 0
PIC	0.45	RCA	0	NucSaf	0	Waste	0.75					
Engr	0.5	ES&Q	0.25	PI/Sch	0.01	Supv	0.18					
			M/S/E		300		Suppt		45			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	5	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.2			Swb	No	SeaVan	No
Weight per WU	7.6			Crate	No	100vpk	No

Basis Of Estimate

Scope Drain oil from reserviors throughout the 300 Area.

Assumptions (1) Lubricant reserviors are located in non-contaminated areas. (2) One work unit will be .1cu-ft. The sampling cost of $3000/sample will be assessed per work unit. (3) It is assumed that 100% of all lubricants will not contain PCB's. (4) Thermal disposal of oil is $1200 / 55 gallon drum. This will assessed to each work unit.

Basis of Estimate (1) This estimate is based on the draining of oils in transformers throughout the 300 Area. (2) To conduct this task, the following activities will be performed: Overall Support (NucOp 0.25, RCT 0.25, Waste 0.25, Engr 0.5, ES&Q 0.25); Sample oil (NucOp 0.25, Suppt $55); Drain/Pump Oil (NucOp 0.25, Suppt $1); Collect Oil in 55 Gallon Drum (NucOp 0.25); Ship Drum to Recycle/Disposal Facility (NucOp 0.25, Waste 0.5). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	1.98	Total BU Dollars:	$118.80		
Total NBU Hours:	2.14	Total NBU Dollars:	$171.20		
		Total Outside Dollars:	$345.00	Total Cost Per Work Unit:	$635.00

WU Family: Drain xformer; cuft Work Unit: Drain Wet Transformers; cuft C e

Description Drain Transformers; per cuft of TRANSFORMER VOLUME

Duration (hours) 8

NucOp	7.75	RCT	0.25	MC	0.85	P/M	0	EI/IT	0.5	Trans	0	OthCr 0
PIC	2.13	RCA	0	NucSaf	0	Waste	1.75					
Engr	0.5	ES&Q	0.25	PI/Sch	2.13	Supv	0.85					
				M/S/E	0			Suppt	60			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	5	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.1			Swb	No	SeaVan	No
Weight per WU	5.5			Crate	No	100vpk	No

Basis Of Estimate

Scope Drain oil from wet transformers throughout the 300 Area.

Assumptions (1) Assume 30% of Transformers are located in non-contaminated areas. (2) Of the total volume of the transformer (cu-ft), 10% of the volume is oil. (3) One work unit will be .1cu-ft. The sampling cost of $3000/sample of a 55 gallon drum,will be assessed to each work unit. (4) Mineral oil filled electrical equipment manufactured before July 2, 1979, and whose PCB concentration is not established is considered PCB contaminated equipment. Based on the construction date of most 300 Area buildings, it is assumed that 100% of all wet transformers will contain PCB's. (4) Thermal disposal of oil is $1200 / 55 gallon drum. This will be assessed for each work unit.

Basis of Estimate (1) This estimate is based on the draining of oils in transformers throughout the 300 Area. (2) To conduct this task, the following activities will be performed: Overall support (NucOp 0.25, RCT 0.25, EL/IT 0.25, Waste 0.25, Eng 0.5, ES&Q 0.25); Perform zero energy check (EI/IT 0.25); Sample Transformer Oil (NucOp 1, Suppt $42); Drain Oil (NucOp 4, Suppt $1); Collect oil in 55 gallon drum (NucOp 1); Complete hazardous waste certification (Waste 0.25); Ship drum to 90 day pad (NucOp 1, Waste 0.5); Inventory drum while on 90 day pad (NucOp 0.25, Waste 0.25); Ship drum to hazardous waste complex (NucOp 0.25, Waste 0.5); Disposal Cost (Suppt $17). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	9.35	Total BU Dollars:	$561.00		
Total NBU Hours:	7.61	Total NBU Dollars:	$608.80		
		Total Outside Dollars:	$60.00	Total Cost Per Work Unit:	$1,229.80

WU Family: Refrigerant, per 2' fan Work Unit: Capture Refrigerant; 2' fan C f

Description Capture Refrigerant; per 2' fan

Duration (hours) 16

NucOp	8	RCT	0	MC	2.4	P/M	8	EI/IT	8	Trans	0	OthCr 0
PIC	6	RCA	0	NucSaf	0	Waste	0					
Engr	1	ES&Q	0	PI/Sch	0.01	Supv	2.4					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope Capture refrigerant from large refrigerant/dryer units throughout the 300 Area.

Assumptions (1) A Refrigerant Team will perform this task. (2) This is only for large ferigerant/drier units, space deactivation template covers window units and refrigerators. (3) The cost of recycling will not be charged to the project. (4) Refrigerant units will not be located in non-contaminated areas. (5) Building roof inspections are current.

Basis of Estimate This estimate is based on the removal of refrigerant from building ventilation systems throughout the 300 Area To conduct this task, the following activities will be performed: Disconnect electrical power (NucOp 4, EL/IT 8, Eng 1); Capture Refrigerant (NucOp 4, P/M 8). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	26.4	Total BU Dollars:	$1,584.00		
Total NBU Hours:	9.41	Total NBU Dollars:	$752.80		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$2,336.80

WU Family: Lead bulk; lb Work Unit: Remove Bulk Lead; lb D a

Description Remove bulk lead and send to waste disposal; lb

Duration (hours) 0.04

NucOp	0.04	RCT	0.03	MC	0.01	P/M	0	EI/IT	0	Trans	0.01	OthCr	0
PIC	0.02	RCA	0	NucSaf	0	Waste	0.01						
Engr	0	ES&Q	0	PI/Sch	0.02	Supv	0.01						
			M/S/E		0.5		Suppt		0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.0014			Swb	No	SeaVan	No
Weight per WU	1			Crate	Yes	100vpk	No

Basis Of Estimate

Scope Remove bulk lead and send to waste disposal.

Assumptions Bulk lead can be loaded in boxes and taken to ERDF for disposal. Disposal/treatment cost is included in the EDRF cost for special waste. Wood boxes will be no higher than 2' and contain about 1,000 lbs. Fork lift is available to unload empty boxes and load full boxes. Estimate does not include the cost for the truck. Material cost is for wood box (~$500 each). No work plans or procedures are required.

Known: 708 lbs = 1 ft3 (1.4 ft3 per 1000 lbs)
Assume: a brick weighs 36 lbs
There are 27.8 bricks @ 36 lbs in 1000 lbs
A lead brick will be 88 in3 or 0.051 ft3
Assume: A lead brick is 3"x31/2"x8"

Basis of Estimate Estimate includes the following activities: Obtain transport boxes (NucOp 2, Trans 4, Waste 2, M/S/E $500); Remove lead (NucOp 24, RCT 16); Load lead (NucOp 16, RCT 8, Waste 4); Transport to ERDF (NucOp 2, RCT 2, Trans 4, Waste 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.09	Total BU Dollars:	$5.40		
Total NBU Hours:	5.999999E-02	Total NBU Dollars:	$4.80		
		Total Outside Dollars:	$0.50	Total Cost Per Work Unit:	$10.70

WU Family: Lead brick; clean, ea Work Unit: Remove Clean Lead Bricks; ea D b

Description Remove non-contaminated lead bricks; ea

Duration (hours) 0.16

NucOp	0.16	RCT	0	MC	0.02	P/M	0	EI/IT	0	Trans	0.08	OthCr	0
PIC	0.06	RCA	0	NucSaf	0	Waste	0.06						
Engr	0	ES&Q	0	PI/Sch	0.06	Supv	0.02						
				M/S/E	20			Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.052			Swb	No	SeaVan	Yes
Weight per WU	36			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove non-contaminated lead bricks and send them to recycle.

Assumptions Lead can be loaded in bulk and taken to recycle. Wood boxes will be no higher than 2' and contain about 1,000 lbs. Four boxes will be required. Fork lift is available to unload empty boxes and load full boxes. Estimate does not include the cost for the truck. Material cost is for wood boxes (~$500 each)
No work plans or procedures are required. Known: 708 lbs = 1 ft3 (1.4 ft3 per 1000 lbs); Assume: a brick weighs 36 lbs; There are 27.8 bricks @ 36 lbs in 1000 lbs; A lead brick will be 88 in3 or 0.051 ft3
Assume: A lead brick is 3"x31/2"x8".

Basis of Estimate Estimate is based on discussing the task with operators. Estimate is to package, remove and send the lead bricks to recycle. Estimate includes the following activities: Obtain transport boxes (NucOp 2, Trans 4, Waste 2, M/S/E $2,000); Load lead bricks (NucOp 12); Transport to recycle (NucOp 2, Trans 4, Waste 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.26	Total BU Dollars:	$15.60		
Total NBU Hours:	0.2	Total NBU Dollars:	$16.00		
		Total Outside Dollars:	$20.00	Total Cost Per Work Unit:	$51.60

WU Family: Lead brick; cont., ea Work Unit: Remove Cont. Lead Bricks; ea D c

Description Remove contaminated lead bricks and send them to waste disposal; ea

Duration (hours) 0.4

NucOp	0.2	RCT	0.02	MC	0.03	P/M	0	EI/IT	0	Trans	0.08	OthCr	0
PIC	0.08	RCA	0	NucSaf	0	Waste	0.06						
Engr	0	ES&Q	0	PI/Sch	0.08	Supv	0.03						
			M/S/E		20		Suppt		0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.052			Swb	No	SeaVan	Yes
Weight per WU	36			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove contaminated lead bricks and send them to waste disposal.

Assumptions Contaminated lead can be loaded in bulk and taken to ERDF for disposal. Disposal/treatment cost is included in the EDRF cost for special waste. Wood boxes will be no higher than 2' and contain about 1,000 lbs. Four boxes will be required. Fork lift is available to unload empty boxes and load full boxes
Estimate does not include the cost for the truck. Material cost is for wood box (~$500 each)
No work plans or procedures are required. Known: 708 lbs = 1 ft3 (1.4 ft3 per 1000 lbs); Assume: a brick weighs 36 lbs; There are 27.8 bricks @ 36 lbs in 1000 lbs; A lead brick will be 88 in3 or 0.051 ft3
Assume: A lead brick is 3"x31/2"x8"

Basis of Estimate Estimate is based on discussing the task with operators. Estimate is to package, remove and dispose of the lead bricks. Estimate includes the following activities: Obtain transport boxes (NucOp 2, Trans 4, Waste 2, M/S/E $2,000); Load lead bricks (NucOp 16); Transport to ERDF (NucOp 2, RCT 2, Trans 4, Waste 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.33	Total BU Dollars:	$19.80		
Total NBU Hours:	0.25	Total NBU Dollars:	$20.00		
		Total Outside Dollars:	$20.00	Total Cost Per Work Unit:	$59.80

WU Family: Lead sheet; sqft Work Unit: Lead sheet; sqft D d

Description Remove lead sheet from Outside of glovebox or other location where used for shielding

Duration (hours) 0.2

NucOp	0.2	RCT	0.2	MC	0	P/M	0.2	El/IT	0	Trans	0	OthCr 0.06
PIC	0	RCA	0	NucSaf	0	Waste	0.02					
Engr	0	ES&Q	0	Pl/Sch	0	Supv	0					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.1			Swb	No	SeaVan	No
Weight per WU	20			Crate	No	100vpk	No

Basis Of Estimate

Scope Removal of lead sheet about 1/2" thick from the outside of GBs or other shielded surfaces. The Work Unit is intended for use in situations with 100 sq ft or more of lead sheet; for less, a factor should be used to increase the sq ft to account for less economy of scale. Removal will be accomplished by a PipF/Milw and an Operator with RCT coverage using an electric or pneumatic chisel. The scrap lead will be either LLM or Hazardous Waste, and will be packaged in drums or crates. 1. Mobilizing to remove the lead (i.e., getting equipment & supplies in place, setting up waste drums, and planning job.
2. Removing Lead and Packaging the waste. (The scrap lead is assumed to be LLM or Hazardous Waste and is packaged as such.) 3. Providing Radiation Control Support. 4. Consumables and Supplies.

Assumptions 1. Lead will be removed by a crew of a PipF/Milw and an Operator with RCT coverage at a rate of 5 sq. ft per hour per crew. 2. A square foot of lead weighs 14.3 lbs., and it is desirable that drum weight not exceed 500 lbs. max. Therefore, ~35 sqft. of lead can be placed in each drum. 3. Lead will be removed utilizing an electric or pneumatic chisel (See demo. tape of D&D tools for visual of effort required).

Basis of Estimate Crew of 1NucOp, 1RCT, 1Pipf/Milw working in a CA. This WU is based on information developed by RFETS/Ted Kearns' using time study data collected during the removal of lead for the PROVE Project D&D and are believed to be archived at RFETS. This work was done in a CA. Additional time studies were conducted during the removal of GB007 from B779 in 1995. Results are also believed to be archived. This work was done in the B779 Dock Area outside of the building. Productivity units here were derived from a combination of the above time studies because the work conditions will be different. Box #0010 Rm. 2325, B371 & Box # 0024, RM 149, Bldg. 771 were used as guides to develop the standard.

Total BU Hours:	0.66	Total BU Dollars:	$39.60		
Total NBU Hours:	0.02	Total NBU Dollars:	$1.60		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$41.20

WU Family: HEPA filter; ea Work Unit: Remove HEPA Filter Media; ea D e

Description Remove HEPA Filter Media (est based on a single filter)

Duration (hours) 160

NucOp	80	RCT	56	MC	14.8	P/M	4	El/IT	0	Trans	8	OthCr	0
PIC	37	RCA	0	NucSaf	0	Waste	12						
Engr	10	ES&Q	0	Pl/Sch	37	Supv	14.8						
			M/S/E		1100		Suppt		750				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	5			Swb	No	SeaVan	No
Weight per WU	60			Crate	No	100vpk	No

Basis Of Estimate

Scope

Assumptions

Basis of Estimate

Total BU Hours:	162.8	Total BU Dollars:	$9,768.00		
Total NBU Hours:	110.8	Total NBU Dollars:	$8,864.00		
		Total Outside Dollars:	$1,850.00	Total Cost Per Work Unit:	$20,482.00

WU Family: Resin; gal Work Unit: Remove Resin; gal D f

Description Remove and dispose of resin from demineralizers; gallon

Duration (hours) 1.6

NucOp	0.28	RCT	0	MC	0.05	P/M	0	EI/IT	0	Trans	0	OthCr 0
PIC	0.07	RCA	0.07	NucSaf	0	Waste	0.02					
Engr	0.02	ES&Q	0	PI/Sch	0.07	Supv	0.03					
			M/S/E		2		Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.13			Swb	No	SeaVan	No
Weight per WU	8.5			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove and dispose of resin from demineralizers

Assumptions Assume there is a valid MSDS for the resin from which it can be designated and no sampling is required. Resin is designated as non-dangerous, non-regulated and non-radioactive and can be disposed of to the sanitary land fill. Assume a relatively low volume of resin (<1,000 gallons). Vacuum out the resin using a 55 gallon drum as a "knock out pot". Material estimate is for drums, vacuums, etc.

Basis of Estimate Use the "General Support and work Document" preparation package for general task set up. Use this templete for estimating the effort for resin removal. Estimate includes the following activities: Remove resin (NucOp 24, Eng 2, M/S/E $200), Dispose of resin to dumpster (NucOp 4, Waste 2). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.33	Total BU Dollars:	$19.80		
Total NBU Hours:	0.28	Total NBU Dollars:	$22.40		
		Total Outside Dollars:	$2.00	Total Cost Per Work Unit:	$44.20

WU Family: Special hazard; ea Work Unit: RCRA Closure Contract; ea D g

Description RCRA Closure Contract; ea

Duration (hours) 1

NucOp	0	RCT	0	MC	0	P/M	0	EI/IT	0	Trans	0	OthCr	0
PIC	0	RCA	0	NucSaf	0	Waste	0						
Engr	0	ES&Q	0	PI/Sch	0	Supv	0						
		M/S/E	116000			Suppt	0						

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	0	NoWaste	Yes	Drum	No	Bulk	No
Volume per WU	0			Swb	No	SeaVan	No
Weight per WU	0			Crate	No	100vpk	No

Basis Of Estimate

Scope

Assumptions

Basis of Estimate

Total BU Hours:	0	Total BU Dollars:	$0.00		
Total NBU Hours:	0	Total NBU Dollars:	$0.00		
		Total Outside Dollars:	$116,000.00	Total Cost Per Work Unit:	$116,000.00

WU Family: Special hazard; ea Work Unit: Remove PRTR Reactor; ea D g

Description Remove PRTR Reactor from Building 309

Duration (hours) 1

NucOp	4040	RCT	2120	MC	1843.2	P/M	960	El/IT	160	Trans	880	OthCr 2080
PIC	2560	RCA	0	NucSaf	0	Waste	540					
Engr	2280	ES&Q	1280	Pl/Sch	2560	Supv	1024					
				M/S/E	284000			Suppt	1975000			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	7700			Swb	No	SeaVan	No
Weight per WU	1600000			Crate	No	100vpk	No

Basis Of Estimate

Scope Engineer core removal, design and fabricate lifting and transport equipment, install equipment, remove and transport for disposal core structure and demobilize equipement.

Assumptions Core Structure Slug weight is 800K tons. Dome is removed and cost is estimated by demoltion. Engineering work and special equipment fabrication will be subcontracted. Subcontractor will be hired to provide PRTR Core Structure Lift and transport. PRTR Core will be moved and disposed of as one item (will include upper and lower shields and high density concrete, Separate upper section (collandria) and lift as one complete unit. Strip bottom section out. Reactor void space will be filled with grout. Design of lifting mechanism and supports will be contracted and fabrication will be performed off site. Construction of lifting structure requires a minimum of 5 penetrations through concrete structure to place supports (1 month to core drill holes), $25,000 per cut. Structure will be bolted to lifting fixture.

Basis of Estimate PPE Cost are $100 per /4 bargining unit hrs. Low Level Waste 10 boxes @ 50,000lbs total; 100 LLW drums @ 20,000 lbs total.

Total BU Hours:	12083.2	Total BU Dollars:	$724,992.01		
Total NBU Hours:	10244	Total NBU Dollars:	$819,520.00		
		Total Outside Dollars:	$2,259,000.00	Total Cost Per Work Unit:	$3,803,512.01

WU Family: Special hazard; ea Work Unit: Remove TRIGA Reactor; ea D g

Description Remove TRIGA Reactor Shielding Block and special hazards in reactor area; each

Duration (hours) 1

NucOp	192	RCT	192	MC	0	P/M	0	EI/IT	0	Trans	0	OthCr 400
PIC	96	RCA	0	NucSaf	0	Waste	20					
Engr	96	ES&Q	20	PI/Sch	20	Supv	96					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	1	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	1000			Swb	Yes	SeaVan	No
Weight per WU	225000			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove Concrete Shielding block above reactor area and removable containation.

Assumptions Disassemble includes installing temporary shielding and diassembly and pick blocks. Characterization includes a precharacterization step to determine protective measures for personnel (i.e., shielding, etc.) to conduct characterization. This estimate does not include any fixing of radiological contamination required. This should be accounted for with the fix contamination template.

Basis of Estimate Remove Shild Block: Riggers (5) x 80 hrs, Operators (2) x 80 hrs + 1 PIC x 80 hrs. Characterize Reactor Well: Gamma scan and dose rates, Engineer, and 2 RCTs and 2 NucOps for 16 hrs + PIC for 16 hrs.

Total BU Hours:	784	Total BU Dollars:	$47,040.00		
Total NBU Hours:	348	Total NBU Dollars:	$27,840.00		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$74,880.00

WU Family: TW Farm; ea Work Unit: Excav. & Disp. of TW Farm; ea D h

Description Excavate and Dispose of TW Farm; ea

Duration (hours) 1440

NucOp	681	RCT	594	MC	601.2	P/M	192	EI/IT	0	Trans	0	OthCr 1873
PIC	835	RCA	0	NucSaf	0	Waste	107					
Engr	1639	ES&Q	250	PI/Sch	835	Supv	334					
				M/S/E	128000			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	2000			Swb	No	SeaVan	No
Weight per WU	80000			Crate	No	100vpk	No

Basis Of Estimate

Scope Excavate and Dispose of TW Farm; ea

Assumptions

Basis of Estimate Excavate Emove Tanks (NucOp 577, RCT 577, MC 524.7, P/M 192, OthCr 1569, PIC 729, Eng 962, ES&Q 125, P/S 729, Supv 292, M/S/E $48,000); Transport (NucOp 104, RCT 17, MC 76.5, OthCr 304, PIC 106, Waste 107, Eng 100, ES&Q 125, P/S 106, Supv 42.5, M/S/E $80,000); Closeout (Eng 577)

Total BU Hours:	3941.2	Total BU Dollars:	$236,472.00		
Total NBU Hours:	4000	Total NBU Dollars:	$320,000.00		
		Total Outside Dollars:	$128,000.00	Total Cost Per Work Unit:	$684,472.00

WU Family: Glovebox; ea Work Unit: Remove Glovebox; ea E a

Description Remove Glovebox; ea

Duration (hours) 40

NucOp	148	RCT	106	MC	0	P/M	15	El/IT	13	Trans	0	OthCr 20
PIC	55	RCA	16	NucSaf	4	Waste	40					
Engr	53	ES&Q	52	Pl/Sch	72.5	Supv	29					
				M/S/E	101000			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	1	NoWaste	No	Drum	No	Bulk	No
Volume per WU	96			Swb	Yes	SeaVan	No
Weight per WU	3000			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove equipment, remove glovebox; per glovebox

Assumptions 308 SS Glovebox as model (4x3x8 ft; 96 cu ft)

Basis of Estimate Estimate includes the following activities: Overall support (NucOp 4, RCT 8, RCA 4, NucS 4, Waste 40, ES&Q 40); Isolate all misc services [4 lines per box, onmask] (NucOp 16, RCT 12, P/M 4, EL/IT 8, PIC 10, P/SCH 10, Supv 4); Isolate, disconnect ventilation (NucOp 16, RCT 12, P/M 4, PIC 10, OthCr 8, P/Sch 10 Supv 4); Unbolt/wrap s leeve/move (NucOp 16, RCT 12, P/M 4, PIC 8, P/Sch 8, Supv 3.2); Remove top/size reduce (NucOp 8, PIC 2, P/Sch 2, Supv 0.8); Remove internals (NucOp 8, PIC 2, P/Sch 2, Supv 2); Size reduce base (NucOp 8, PIC 2, P/Sch 2, Supv 0.8); Seal/decon. Waste container (NucOp 8, RCT 8, P/M 2, PIC 4.5, P/Sch 4.5, Supv 1.8); Cleanup SRF-change HEPA filters, etc (NucOp 16, RCT 16, PIC 8, P/Sch 8, Supv 3.2, M/S/E $800); Assay/ship waste (NucOp 8, RCT 8, EL/IT 4, PIC 8, OthCr 12 P/Sch 8, Supv 3.2); Total operating efficiency (NucOp 40, RCT 30, RCA 12, Eng 12, ES&Q 12, P/Sch 17.5, Supv 7, M/S/E $200); Routine Preventative Maintenance (P/M 1, El/IT 1, PIC 0.5, Eng 1, P/Sch 0.5, Supv 0.2). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	302	Total BU Dollars:	$18,120.00		
Total NBU Hours:	321.5	Total NBU Dollars:	$25,720.00		
		Total Outside Dollars:	$101,000.00	Total Cost Per Work Unit:	$144,840.00

WU Family: Hood; ea Work Unit: Remove Hood; ea E b

Description Remove Hood; ea

Duration (hours) 120

NucOp	200	RCT	176	MC	46.08	P/M	56	EI/IT	24	Trans	8	OthCr 24
PIC	122	RCA	22	NucSaf	12	Waste	26					
Engr	60	ES&Q	20	PI/Sch	122	Supv	48.8					
				M/S/E	12500			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk	No
Volume per WU	134			Swb	No	SeaVan	No
Weight per WU	4000			Crate	Yes	100vpk	No

Basis Of Estimate

Scope Remove , transport, size reduce and dispose of hoods throughout the 300 area

Assumptions Removed hoods will have an open pathway out of the building (no wall removal required to get the hood out). Power will be de-energized to the hood prior to removal activities start. Service lines (gas, process, water, steam) lines will be drained & or purged. Minor contamination will be found behind hoods when removed. No liquids will be left in the hood by previous owners. The hoods will contain low levels of contamination. The hoods will not contain material requiring TRU waste disposal (all hoods will go out as LLW). No hold-up in hood HVAC line (contamination is expected). Sample results will not exceed LDR limits. Hoods will be sized reduced and placed into 4'X4'X8' boxes.

Basis of Estimate This estimate is based upon the removal, transfer, size reduction and disposal of hoods throughout the 300 Area. To conduct this task the following activities will be performed: Overall support (NucOp 4, RCT 8,RCA 8, Eng 8); Characterize hood (NucOp 8, RCT 8, RCA 4, NucS 4, Waste 2, Eng 16, ES&Q 4, M/S/E $3,000); Clean hood internals/remove lighting (NucOp 16, RCT 16, EL/IT 8, Waste 2); Fix interior (NucOp 4, RCT 4, OthrCr 4, NucS 2, Eng 4); Isolate feeds to hood [gas, solutions, electrical, etc.] (NucOp 16, RCT 16, P/M 16, EL/IT 8, Eng 4); Isolate HVAC (NucOp 16, RCT 8, P/M 12, Eng 4, ES&Q 2, M/S/E $1,000); Remove hood (NucOp 8, RCT 8, P/M 8, EL/IT 4, OthCr 8, Eng 4, M/S/E $2,000); Decon/Fix area where hood was/decon/fix hood after removal (NucOp 8, RCT 8, OthCr 8, RCA 2, Eng 2, ES&Q 2, M/S/E $500); Package hood for shipment (NucOp 8, RCT 8, Eng 2, ES&Q 2, M/S/E $500); Ship to 308 [includes loading and uploading] (NucOp 16, RCT 16, Trans 8, NucS 2, Eng 4, ES&Q 2, M/S/E $5,000); Prep hood for size reduction [i.e., remove packaging material and glass face] (NucOp 8, RCT 8, P/M 4, RCA 2, NucS 2, Wste 2, Eng 2, M/S/E $500); Size reduce (NucOp 16, RCT 16, NucS 4, Eng 4); Seal/decon waste container (NucOp 8, RCT 8, P/M 4, RCA 2, NucS 2, Waste 4, Eng 2); Clean SRF (NucOp 32, RCT 16, Waste 2); Assay ship waste container (NucOp 12, RCT 8, Trans 4, NucS 4); TOE (NucOp 16, RCT 16, Waste 4); Routine Preventative Mainteance [laser, turntable, manipulators, etc] (NucOp 4, RCT 4, P/M 12, EL/IT 4, NucS 2, Eng 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	534.08	Total BU Dollars:	$32,044.80		
Total NBU Hours:	432.8	Total NBU Dollars:	$34,624.00		
		Total Outside Dollars:	$12,500.00	Total Cost Per Work Unit:	$79,168.80

WU Family: Hot cell; cuft Work Unit: Remove Hot Cell; cuft E c

Description Remove Hot Cell

Duration (hours) 160

NucOp	3.17	RCT	3.37	MC	0.85	P/M	1.46	El/IT	0.38	Trans	0	OthCr 0.38
PIC	2.19	RCA	0.44	NucSaf	0.19	Waste	0.43					
Engr	0.98	ES&Q	0.35	Pl/Sch	2.19	Supv	0.88					
				M/S/E	303.17		Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	1			Swb	No	SeaVan	No
Weight per WU	100			Crate	No	100vpk	No

Basis Of Estimate

Scope Prepare hot cell for removal.

Assumptions BHI will remove the hot cell. This activity will be estimated under the Remove Large Equipment template. Power will be de-energized to the hot cell prior to removal activities start. Service lines (gas, process, water, steam) lines will be drained & or purged. Hot cells are bolted to the floor and can be removed once these bolts are removed. Minor contamination will be found behind hot cells when removed. No liquids will be left in the hot cells by previous owners. Hot cell test material will be removed by the current owner. The hot cells will contain low levels of contamination. The hot cells will not contain material requiring TRU waste disposal (all hot cells will go out as SHW). No hold-up in hood HVAC line (contamination is expected). Charicterization sample results will not exceed LDR limits. Hot cells are free standing units.

Basis of Estimate This estimate is based upon the preparation of hot cells for removal and disposal. To conduct this task the following activities will be performed: Overall support (NucOp 4, RCT 8, RCA 8, Engr 8, ES&Q 8); Characterize hot cell (NucOp 8, RCT 8, RCA 8, NucS 4, Waste 2, Eng 16, ES&Q 4, M/S/E $6,000); Clean hot cell internals/remove lighting (NucOp 16, RCT 32, P/M 16, EL/IT 8, RCA 4, NucS 2, Waste 4, Eng 4, ES&Q 2, M/S/E $1,000); Fix interior (NucOp 4, RCT 4, OthCr 4, NucS 2, Eng 4, M/S/E $100); Isolate feeds to hot cell [gas, solutions, electrical, etc.] (NucOp 16, RCT 16, P/M 16, EL/IT 16, OthCr 4, Waste 1, Eng 4, M/S/E $1,000); Isolate HVAC (NucOp 16, RCT 8, P/M 12, Engr 4, ES&Q 2, M/S/E $1,000); Decon/fix area wher ehot cell was/decon/fix hot cell after removal (NucOp 16, RCT 16, OthCr 8, RCA 2, Waste 4, Eng 2, ES&Q 2, M/S/E $500); Package hot cell for shipment (NucOp 40, RCT 40, Eng 8, ES&Q 2, M/S/E $2,500); Remove equipment (NucOp 40, RCT 40, P/M 32, RCA 2, NucS 2, Waste 4, Eng 4, ES&Q 2, M/S/E $5,000); Remove waste (NucOp 8, RCT 8, RCA 2, Waste 4, Eng 2, $1,000); Remove windows/install cover plate (NucOp 16, RCT 16, OthCr 8, Waste 4, Eng 4, M/S/E $500); Unattach base (NucOp 16, RCT 16, P/M 16, RCA 2, NucS, Waste 4, Eng 2, M/S/E $500). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	9.610001	Total BU Dollars:	$576.60		
Total NBU Hours:	7.650001	Total NBU Dollars:	$612.00		
		Total Outside Dollars:	$303.17	Total Cost Per Work Unit:	$1,491.77

WU Family: Tank, LLW; gal Work Unit: Remove LLW Tank; gal E d

Description Remove LLW Tank; gal

Duration (hours) 0.0224

NucOp	0.045	RCT	0.02	MC	0.011	P/M	0.018	EI/IT	0.004	Trans	0	OthCr 0.021
PIC	0.027	RCA	0.002	NucSaf	0.001	Waste	0.001					
Engr	0	ES&Q	0.001	PI/Sch	0.027	Supv	0					
				M/S/E	0.29			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.004			Swb	No	SeaVan	No
Weight per WU	1.47			Crate	Yes	100vpk	No

Basis Of Estimate

Scope Remove, transport, size reduce and dispose of low level waste tanks throughout the 300 Area

Assumptions Tank which meet D&D rubble size criteria (e.g., 24" diameter) will be left in place and out of scope. Work units 5,000 gal (e.g., 1 unit = 1-5,000 gal; 2 units = 5,001-10,000 gal, etc.). Lagging removed only to extent necessary for size reduction and tank disposal. Tank external cleaning performed when required. Asbestos removal/disposition out of scope. In-situ size reduction. Liquids in tanks and service piping draining previously. Shear cut less than 0.5 inches thick or crush. Saw cut or hot cut thicker sections. Tank internals/external contamination stabilized by painting prior to size reduction.
All services de-energized or isolated and out of scope. Low level contamination only. No mixed waste. Normal rad waste. Special case waste scaled and recorded.

Basis of Estimate To conduct this task, the following activities will be performed. Stage materials/setup - including PPEs, tank removal tools and equipment, Radiological Control materials (plastic, etc.), lighting, ladders, scaffolding, etc., as necessary, rigging equipment, as needed, radiation zones and monitoring (NucOp 75, RCT 20, EL/IT 10, OthCr 50, RCA 5, ES&Q 5, M/S/E 100); Lagging removal/disposition - including remove and dispose for size reduction (NucOp 25, RCT 15, M/S/E 100); Fix interior/exterior contamination (NucOp 20, RCT 10, OthCr 25, M/S/E 50); Tank removal preparation - including bag connecting piping, conduit, ventilation connection, cut connecting component and seal ends, unbolt or cut tank retainers, rig and remove if needed (NucOp 25, RCT 15, P/M 40, EL/IT 10, M/S/E 100); Size Reduce (NucOp 25, RCT 15, P/M 40, M/S/E 300); Remove/Leading (NucOp 20, RCT 10, P/M 10, M/S/E 300); Shipping (NucOp 5, RCT 5, RCA 5, Waste 5, M/S/E 500); Breakdown Site (NucOp 30, RCT 10, OthCr 30). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.119	Total BU Dollars:	$7.14		
Total NBU Hours:	0.059	Total NBU Dollars:	$4.72		
		Total Outside Dollars:	$0.29	Total Cost Per Work Unit:	$12.15

WU Family: Tank, haz; gal Work Unit: Remove Haz Tank; gal E e

Description Remove Hazardous Tank; gal

Duration (hours) 0.0224

NucOp	0.044	RCT	0.006	MC	0.008	P/M	0.008	El/IT	0.004	Trans	0	OthCr 0.015
PIC	0.019	RCA	0.002	NucSaf	0	Waste	0.002					
Engr	0	ES&Q	0	Pl/Sch	0.019	Supv	0.008					
				M/S/E	0.164			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	5	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	0.1351			Swb	No	SeaVan	No
Weight per WU	1.57			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove, transport, size reduce, and dispose of hazardous tanks throughout the 300 Area.

Assumptions All tanks will be cleaned by flushing or mechanical means and dispositioned as clean tanks. Lagging removed for external cleaning when needed. Asbestos removal/disposition out of scope. No size reduction required for clean tanks which can be shipped on standard shipping vehicle (truck). Tanks requiring size reduction are special case and estimated on a case-by-case basis. Liquids in tanks service piping draining previously. All services de-energized or isolated and out of scope. No mixed waste. Work units 5,000 gal (e.g., 1 unit = 1-5,000 gal; 2 units = 5,001-10,000 gal, etc.).

Basis of Estimate To conduct this task, the following activities will be performed: Stage materials/setup - including PPEs, tank removal tools and equipment, hazardous control materials (plastic, etc.), lighting, ladders, scaffolding, etc., as necessary, rigging equipment, as needed (NucOp 75, RCT 5, EL/IT 10, OthCr 50, RCA 5); Lagging removal/disposition (NucOp 25, RCT 5, M/S/E 20); Hazardous material removal - including flush/clean tank, package hazardous materials as solids or liquids, ship hazardous materials (NucOp 50, RCT 10, Waste 5, M/S/E 200); Tank removal preparation - including bag connecting piping, conduit, ventilation connection as needed, cut connecting component and seal ends, unbolt or cut tank retainers, rig and remove if needed (NucOp 20, P/M 40, El/IT 10); Loading/shipping clean tank (NucOp 20, RCT 5, RCA 5, Waste 5, M/S/E 600); Break down site - including remove staged materials and equipment, remove scaffolding, ladders, as needed (NucOp 30, RCT 5, OthCr 25). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.085	Total BU Dollars:	$5.10		
Total NBU Hours:	0.05	Total NBU Dollars:	$4.00		
		Total Outside Dollars:	$0.16	Total Cost Per Work Unit:	$9.26

WU Family: Tank, clean; gal Work Unit: Remove Clean Tank; gal E f

Description Remove Clean Tank; gal

Duration (hours) 0.008

NucOp	0.01	RCT	0.002	MC	0.003	P/M	0	El/IT	0.002	Trans	0	OthCr 0.015
PIC	0.007	RCA	0	NucSaf	0	Waste	0.001					
Engr	0	ES&Q	0.001	Pl/Sch	0.007	Supv	0.003					
			M/S/E		0.12		Suppt		0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	0.1336			Swb	No	SeaVan	No
Weight per WU	1.47			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove, transport, size reduce and dispose of clean tank throughout the 300 Area.

Assumptions Tanks which meet D&D rubble size criteria (e.g., 24" diameter) will be left in place. Larger clean tanks will be shipped by truck for metal recycle. Units of work 5,000 gal (e.g., 1 unit = 1-5,000 gal; 2 units = 5,001-10,000 gal, etc.). Asbestos removal/disposition out of scope. No size reduction required for any tank which can be loaded/shipped on standard shipping vehicle (truck). Tanks requiring size reduction are special case and recorded. All services de-energized or isolated and out of scope. Liquids in tanks and connecting piping drained previously. No radiological or hazardous contamination. Sludge/heels covered in separate scope.

Basis of Estimate This estimate is based upon the removal, size reduction and transport for disposal of clean tanks throughout the 300 Area. To conduct this task, the following activities will be performed: Stage materials/setup (NucOp 30, RCT 5, EL/IT 10, OthCr 50, ES&Q 5); Loading/Shipping (NucOp 10, Waste 5, M/S/E 600); Breakdown Site (NucOp 10, RCT 5, OthCr 25). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.032	Total BU Dollars:	$1.92		
Total NBU Hours:	0.019	Total NBU Dollars:	$1.52		
		Total Outside Dollars:	$0.12	Total Cost Per Work Unit:	$3.56

WU Family: Tk residue; gal Work Unit: Remove Tank Residue; gal E g

Description Remove tank residue resulting in 1000 gal of sludge type waste; gal

Duration (hours) 1

NucOp	240	RCT	160	MC	0	P/M	0	EI/IT	0	Trans	0	OthCr 0
PIC	80	RCA	0	NucSaf	0	Waste	40					
Engr	80	ES&Q	0	PI/Sch	0	Supv	0					
				M/S/E	50000			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	Yes	Bulk	No
Volume per WU	134			Swb	No	SeaVan	No
Weight per WU	13400			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove residue from tank.

Assumptions Unknown characteristics for waste designation. Assumes residue in tank contains both liquid and solid materials (i.e., sludge-like in nature). Because of the narying nature of this in the field, a conservative estimate is made based on a per tank basis rather than a per gallon basis. Final waste volume will be treated as mixed waste and is assumed to be 1000 gal for the purpose of estimating waste volume. An increase in waste volume <2000 gal should not significantly impact this estimate with the exception that highly radioactive waste would require significantly more transporation and disposal costs and should be taken into account when estimating (most likely by a factor of two ro three or more).

Basis of Estimate Characterization of residue: $35,000; includes sampling and analysis. Removal and disposal (NucOps 3x80 hrs, RCT 2x80 hrs, Eng 1x80 hrs, Waste 1x40 hrs, PIC 1x40 hrs, transporatation and packaging $15,000).

Total BU Hours:	400	Total BU Dollars:	$24,000.00		
Total NBU Hours:	200	Total NBU Dollars:	$16,000.00		
		Total Outside Dollars:	$50,000.00	Total Cost Per Work Unit:	$90,000.00

WU Family: Piping, TRU; linft Work Unit: Piping, TRU; linft E h

Description Cut, wrap, and package TRU piping based on small pipe, uninsulated, up to 4"; 4' lengths

Duration (hours) 0.4

NucOp	2.2	RCT	1.3	MC	0.9	P/M	0.4	EI/IT	0	Trans	0	OthCr 0.04
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0.04					
			M/S/E		25		Suppt		0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	1	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.15			Swb	Yes	SeaVan	No
Weight per WU	4			Crate	No	100vpk	No

Basis Of Estimate

Scope Cut, wrap, and package TRU piping based on small pipe, uninsulated, up to 4"; 4' lengths

Assumptions A sleeve is required for contamination control and is used to wrap the 4' pipe section

Basis of Estimate This unit estimate is for the cutting, wrapping and pagkaging of one linear foot; based on small pipe, uninsulated, up to 4"; 4' length; 5 sections (5 cuts) in a shift; assumes $100/cut mat'ls; crew includes 3 NO, 2 RCT, 1 PIC

The unit estimate also includes sleeve 6' long, 24" diameter per 4' section; NO 4, RCT 2, support, $200 matl.

Total BU Hours:	4.84	Total BU Dollars:	$290.40		
Total NBU Hours:	0.04	Total NBU Dollars:	$3.20		
		Total Outside Dollars:	$25.00	Total Cost Per Work Unit:	$318.60

WU Family: Piping, LLW; linft Work Unit: Piping, LLW; linft E i

Description Cut, lower, remove and stage LLW piping over 8 ft off ground, any size, 10 foot lengths

Duration (hours) 0.021

NucOp	0.025	RCT	0.004	MC	0.021	P/M	0.042	EI/IT	0	Trans	0	OthCr 0.001
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0.001					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk	No
Volume per WU	0.3			Swb	No	SeaVan	Yes
Weight per WU	12.5			Crate	No	100vpk	No

Basis Of Estimate

Scope Cut, lower, remove and stage LLW piping over 8 ft off ground, any size, 10 foot lengths

Assumptions Piping is distributed around space and must be taken out in individual runs. (If piping can be cut and removed in racks, reduce estimated linft according to expected efficiency.)

Piping is elevated, and duct jack/scissor lift is used to lower.

Waste will be LLW, but if greater than 75 mrem/hr or 200,000 dpm it will be special waste and should be assigned type LLWM.

Basis of Estimate Based on 10 foot sections; 5 sections per hour; 6 hours productive time per day; 2 P/M, 1 NO, 1PIC; supported by RCT 20%; and (NO + Trans/EO) 10% to move piping out; Supv and Mgt 5%

Total BU Hours:	0.093	Total BU Dollars:	$5.58		
Total NBU Hours:	0.001	Total NBU Dollars:	$0.08		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$5.66

WU Family: Piping, haz; linft Work Unit: Remove HAZ Piping; linft E j

Description Cut, lower, remove, clean, and stage hazardous contaminated piping assumed elevated; linft

Duration (hours) 0.04

NucOp	0.12	RCT	0.043	MC	0.007	P/M	0.16	El/IT	0	Trans	0	OthCr 0.002
PIC	0	RCA	0	NucSaf	0	Waste	0.04					
Engr	0	ES&Q	0	Pl/Sch	0	Supv	0.002					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	0.2			Swb	No	SeaVan	No
Weight per WU	5			Crate	No	100vpk	No

Basis Of Estimate

Scope Cut, lower, remove, clean, and stage elevated hazardous piping.

Assumptions Piping is elevated, and duck jack/scissor lift is used to lower. Waste will be LLW, but if greater than 75 mrem/hr or 200,000 dpm it will be special waste and should be assigned type LLWM. Hazardous residue removed will be mixed. Hazardous residue will be removed by flushing or mechanical means.

Basis of Estimate Based on 10 ft sections, 3 sections per hour, 6 hours productive time per day; 2 P/M, 1 NucOp; supported by PIC 20%, RCT 10%; and (CO+Trans/EO) 10% to move piping out; Supv and Mgt 5%. Resources required for haz removal (NucOps 2, RCT 1, P/M 2, Waste 1) for 0.5 hr per section = NucOps 18 hrs, RCT 9 hrs, P/M 18 hrs, Waste 9 hrs total.

Total BU Hours:	0.332	Total BU Dollars:	$19.92		
Total NBU Hours:	0.042	Total NBU Dollars:	$3.36		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$23.28

WU Family: Piping >24"; linft Work Unit: Piping, Clean>24in; linft E k

Description Cut, lower, remove and stage clean piping assumed elevated, over 24"dia, 10 foot lengths

Duration (hours) 0.04

NucOp	0.04	RCT	0.0033	MC	0.0067	P/M	0.07	EI/IT	0	Trans	0	OthCr 0.0017
PIC	0	RCA	0	NucSaf	0	Waste	0					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0.0017					
				M/S/E	0		Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	5			Swb	No	SeaVan	No
Weight per WU	30			Crate	No	100vpk	No

Basis Of Estimate

Scope Cut, lower, remove and stage elevated clean piping over 24 in dia, 10 foot lengths

Assumptions Piping is elevated, and duct jack/scissor lift is used to lower.

Waste will be LLW, but if greater than 75 mrem/hr or 200,000 dpm it will be special waste and should be assigned type LLWM.

Basis of Estimate Based on 10 foot sections; 3 sections per hour; 6 hours productive time per day; 2 P/M, 1 NO; supported by PIC 20%, RCT 10%; and (NO + Trans/EO) 10% to move piping out; Supv and Mgt 5%

Total BU Hours:	0.1217	Total BU Dollars:	$7.30		
Total NBU Hours:	0.0017	Total NBU Dollars:	$0.14		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$7.44

WU Family: Ducting, TRU; linft Work Unit: Ducting, TRU; linft E I

Description Remove TRU contaminated ducting nominally 12"

Duration (hours) 0.4

NucOp	0.4	RCT	0.2	MC	0.12	P/M	0.8	EI/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0	NucSaf	0	Waste	0.015					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0					
				M/S/E	0			Suppt	0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	1	NoWaste	No	Drum	No	Bulk	No
Volume per WU	1			Swb	Yes	SeaVan	No
Weight per WU	20			Crate	No	100vpk	No

Basis Of Estimate

Scope This unit estimate removes TRU contaminated ducting. Extra precautions for contamination control are incorporated due to increased risk to the worker should a airborne release occur. This increases the cost of this work. This work unit is derived from an estimate by Ted Kearns/RFETS that removes 200 linear ft of duct in about 4 days and results in ~1 SWB of TRU waste. 1. Mobilizing to remove the duc t (i.e., getting equipment & supplies in place marking cut locations, planning job. 2. Placing of sleeve over duct to be cut, encasing tools inside of sleeve. 3. Cutting duct into pieces about 4'. Isolating them in the sleeve and placing them in a SWB. 4. Providing radiation control support. 5. Consumable supplies, materials, SWBs and PPE costs. 6. Packaging waste and move to dock.

Assumptions 1. All equipment, gloveboxes and obstructions in front of or under the duct have been removed. 2. Scissors lifts will be used to reach work. 3. Mechanical means; e.g., Sawsalls, are used to cut the duct.

Basis of Estimate Crew of 2 PipF, 1 NO, RCT 50%, PIC 30%. Derived from data collected on the 371 PROVE Project and extracted data from several B771 removal projects conducted in late 1980's, and T. Kearns'/RFETS observations and mini-time studies of work-in-progress on the above projects and others. The method of utilizing scissors lifts and having all other equipment moved first was selected based upon the Estimator's observations, which show that the selected method is 2 to 3 times more productive than using scaffold and trying to work around and/or over floor mounted equipment. Mechanical means; i.e., Sawsalls, mechanical pipe cutters, etc., are used to cut the duct inside of the plastic sleeve.

Total BU Hours:	1.52	Total BU Dollars:	$91.20		
Total NBU Hours:	0.015	Total NBU Dollars:	$1.20		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$92.40

WU Family: Ducting, LLW; linft Work Unit: Smear/fix LLW ducting; linft E m

Description Drill, smear and fix large LLW ducting; leave for bldg demo

Duration (hours) 0.1

NucOp	0.1	RCT	0.05	MC	0.05	P/M	0.25	EI/IT	0	Trans	0	OthCr 0
PIC	0	RCA	0	NucSaf	0	Waste	0.015					
Engr	0	ES&Q	0	PI/Sch	0	Supv	0					
			M/S/E		0		Suppt		0			

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk Yes
Volume per WU	0.1			Swb	No	SeaVan No
Weight per WU	20			Crate	No	100vpk No

Basis Of Estimate

Scope This unit estimate removes LLW contaminated ducting.

Assumptions

Basis of Estimate Based on 25% of the effort for TRU ducting

Total BU Hours:	0.45	Total BU Dollars:	$27.00		
Total NBU Hours:	0.015	Total NBU Dollars:	$1.20		
		Total Outside Dollars:	$0.00	Total Cost Per Work Unit:	$28.20

WU Family: Batt., clean, ea Work Unit: Remove Clean Batteries; ea E n

Description Remove batteries and send them to recycle

Duration (hours) 0.4

NucOp	0.2	RCT	0	MC	0.04	P/M	0	EI/IT	0	Trans	0.04	OthCr	0
PIC	0.06	RCA	0	NucSaf	0	Waste	0.1						
Engr	0	ES&Q	0	PI/Sch	0.06	Supv	0.02						
			M/S/E		20		Suppt		0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	0.01			Swb	No	SeaVan	No
Weight per WU	0.4			Crate	No	100vpk	No

Basis Of Estimate

Scope Remove batteries and send them to recycle.

Assumptions Operators can remove and take the batteries to the collection point.
Wet-cell batteries can be sent to recycle without removing the liquids. Fork lift is available to load recycle containers. Estimate does not include the cost (rental) for the truck. Material cost is for wood box (~$500 each). No work plans or procedures are required.

Basis of Estimate Estimate includes the following activities: Set up battery collection area (NucOp 2, Waste 2, M/S/E $2,000); Remove battery (NucOp 16, Waste 4); Ship collection container (NucOp 2, Trans 4, Waste 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.28	Total BU Dollars:	$16.80		
Total NBU Hours:	0.24	Total NBU Dollars:	$19.20		
		Total Outside Dollars:	$20.00	Total Cost Per Work Unit:	$56.00

WU Family: Batt., cont., ea Work Unit: Remove Cont. Batteries; ea E o

Description Remove contaminated batteries, drain batteries containing liquid and send them to waste disposal

Duration (hours) 1.6

NucOp	0.64	RCT	0.1	MC	0.15	P/M	0	EI/IT	0	Trans	0.08	OthCr	0
PIC	0.21	RCA	0	NucSaf	0	Waste	0.22						
Engr	0	ES&Q	0	PI/Sch	0.21	Supv	0.08						
			M/S/E		27		Suppt		30				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	4	NoWaste	No	Drum	No	Bulk	No
Volume per WU	2			Swb	No	SeaVan	No
Weight per WU	70			Crate	Yes	100vpk	No

Basis Of Estimate

Scope Remove contaminated batteries, drain batteries containing liquid and send them to waste disposal.

Assumptions Operators can remove and take the batteries to the collection point. Operators remove liquid, if present (assume only 1 out of 20 batteries has liquid), from the batteries and put in a drum (2nd waste stream). Disposal/treatment cost of batteries is included in the EDRF cost for special waste. Fork lift is available to load waste containers. Estimate does not include the cost (rental) for the truck. Material cost is for wood box (~$500 each) and protective clothing ($50 per 4 craft hours x ~.75 since not everybody dresses). Waste volume estimate is only for liquid from batteries and it is assumed to be mixed. Waste from the batteries is assumed to be 2 ftcu and 700 lbs. Analytical cost is for sampling/characterizing the liquid stream from the batteries. No work plans or procedures are required.

Basis of Estimate Estimate includes the following activities: Set up battery collection area (NucOp 2, Waste 2, M/S/E $2,000); Remove/drain batteries (NucOp 48, Waste 4, M/S/E $500); Dispose of collection container (NucOp 2, RCT 2, Trans 4, Waste 4); Sample liquid collection drum (NucOp 8, RCT 4, Waste 8, M/S/E $200, Suppt $3,000); Dispose of th liquid collection drum (NucOp 4, RCT 4, Trans 4, Waste 4). Assumes PIC = 25% of craft, P/S =25% of craft, Supv = 10% of craft, and Matl Coord = 10% of craft. All calculated fields = at least 0.01.

Total BU Hours:	0.97	Total BU Dollars:	$58.20		
Total NBU Hours:	0.72	Total NBU Dollars:	$57.60		
		Total Outside Dollars:	$57.00	Total Cost Per Work Unit:	$172.80

WU Family: Large equip, LLW; pick Work Unit: Large equip, LLW; pick E p

Description Remove piece of rad contaminated large equip about 6x10x6, 10,000 lb.

Duration (hours) 37.5

NucOp	75	RCT	6.25	MC	18.75	P/M	0	EI/IT	0	Trans	43.75	OthCr	0
PIC	0	RCA	0	NucSaf	0	Waste	0						
Engr	3.75	ES&Q	37.5	Pl/Sch	6.25	Supv	3.75						
			M/S/E		1250		Suppt		0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	3	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	3600			Swb	No	SeaVan	No
Weight per WU	10000			Crate	No	100vpk	No

Basis Of Estimate

Scope Sling, lift and haul piece of large equip about 6x10x6, 10,000 lb.

Assumptions Use multiplier of 1.25 for Rad contaminated equipment

Basis of Estimate Resources have been estimated at 1.25 times the values that were developed for clean equipment:

Full-time crew of 2 NO, 1 Trans/HEO, 1Saf/IH slings equipment, picks with crane and hauls. PIC 50% support. RCO 5 hr to survey and clear piece. Second HEO (oiler) 5 hr. Support (Engr 3, Pl/Sch 5, Mgr 3)

Total BU Hours:	143.75	Total BU Dollars:	$8,625.00		
Total NBU Hours:	51.25	Total NBU Dollars:	$4,100.00		
		Total Outside Dollars:	$1,250.00	Total Cost Per Work Unit:	$13,975.00

WU Family: Large equip, clean; pick Work Unit: Large equip, clean; pick E q

Description Remove piece of large equip about 6x10x6, 10,000 lb.

Duration (hours) 30

NucOp	60	RCT	5	MC	15	P/M	0	EI/IT	0	Trans	35	OthCr	0
PIC	0	RCA	0	NucSaf	0	Waste	0						
Engr	3	ES&Q	30	Pl/Sch	5	Supv	3						
				M/S/E	1000			Suppt	0				

NOTE: For concise report, only the first waste type and container is shown below. See Library screen for the complete list of other combinations allowed for each work unit

Waste Type	6	NoWaste	No	Drum	No	Bulk	Yes
Volume per WU	3600			Swb	No	SeaVan	No
Weight per WU	10000			Crate	No	100vpk	No

Basis Of Estimate

Scope Sling, lift and haul piece of large equip about 6x10x6, 10,000 lb.

Assumptions

Basis of Estimate Full-time crew of 2 NO, 1 Trans/HEO, 1Saf/IH slings equipment, picks with crane and hauls. PIC 50% support. RCO 5 hr to survey and clear piece. Second HEO (oiler) 5 hr. Support (Engr 3, Pl/Sch 5, Mgr 3)

Total BU Hours:	115	Total BU Dollars:	$6,900.00		
Total NBU Hours:	41	Total NBU Dollars:	$3,280.00		
		Total Outside Dollars:	$1,000.00	Total Cost Per Work Unit:	$11,180.00